

CLAIMS

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- 1 Polynucleotide vaccine formula intended for
bovines, comprising an intradermally effective quantity
of a plasmid combining a DNA sequence encoding an
immunogen of a bovine pathogenic agent and a promoter
allowing the expression of this immunogen *in vivo* in
the cells of the skin, this vaccine formula being
suitable for intradermal administration with an
apparatus for liquid jet administration.
2. Vaccine formula according to Claim 1, charac-
terized in that the plasmid is presented in a vehicle
suitable for the intradermal route in a dose volume of
between 0.1 and 0.9 ml, preferably between 0.2 and
0.6 ml, still more preferably 0.4 and 0.5 ml, capable
of being administered intradermally by liquid jet.
3. Vaccine formula according to Claim 1 or 2,
characterized in that the plasmid is present in the
vaccine formula in an intradermally effective quantity
of 10 ng to 1 mg, preferably of 100 ng to 500 μ g, more
preferably of 0.5 μ g to 50 μ g.
4. Vaccine formula according to Claim 3, charac-
terized in that the DNA sequence encodes an immunogen
of a pathogenic agent chosen from the group consisting
of BRSV virus, IBR virus, BVD virus and PI 3 virus.
5. Vaccine formula according to Claim 4, charac-
terized in that the DNA sequence encodes the IBR virus
gB gene and/or gD gene.
6. Vaccine formula according to Claim 4, charac-
terized in that the DNA sequence encodes the BRSV G
and/or F gene.
7. Vaccine formula according to Claim 4, charac-
terized in that the DNA sequence encodes E2 and/or E1
from the BVD virus.
8. Vaccine formula according to Claim 4, charac-
terized in that the DNA sequence encodes HN and/or F
from the PI 3 virus.
9. Vaccine formula according to any one of Claims
1 to 8, characterized in that the promoter is a strong
eukaryotic promoter, such as the hCMV IE promoter.

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10. Vaccine formula according to any one of Claims 1 to 9, characterized in that it is packaged in a multidose vial fitted to an apparatus for liquid jet intradermal administration, preferably the Pigjet.
- 5 11. Portable bovine vaccination unit comprising an apparatus for liquid jet administration and a suitable vial comprising several doses of a vaccine formula according to any one of Claims 1 to 10, the apparatus for administration being designed to deliver a dose of
- 10 vaccine formula intradermally.
12. Installation according to Claim 11, characterized in that the apparatus comprises a discharge head provided with 1 to 10 nozzles, especially 4 to 6, preferably 5 or 6.
- 15 13. Use of a plasmid combining a DNA sequence encoding a bovine immunogen and a promoter allowing the expression of this immunogen, for the preparation of a polynucleotide vaccine formula suitable for intradermal administration with an apparatus for liquid jet
- 20 administration.
14. Use according to Claim 13, characterized in that it comprises between 10 ng and 1 mg of DNA, preferably between 100 ng and 500 μ g, preferably between 0.5 μ g and 50 μ g, in a dose volume of between
- 25 0.1 and 0.9 ml, preferably between 0.2 and 0.6 ml, still more preferably between 0.4 and 0.5 ml.
15. Use according to Claim 12, characterized in that the DNA sequence encodes an immunogen of a pathogenic agent chosen from the group consisting of
- 30 BRSV, IBR, BVD and PI 3 viruses.

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